

that of nutation, as far as these are produced by the disturbing force of the sun.

A similar deviation, the author observes, is produced by the action of the moon ; but a minute investigation of the deviation from that cause is foreign to the design of the present communication.

*An Account of two Children born with Cataracts in their Eyes, to show that their Sight was obscured in very different Degrees ; with Experiments to determine the proportional Knowledge of Objects acquired by them immediately after the Cataracts were removed. By Everard Home, Esq. F.R.S. Read January 15, 1807. [Phil. Trans. 1807, p. 83.]*

The design of the present communication is to explain a disagreement between the results of former experiments on this subject ; since a very intelligent boy, thirteen years of age, couched by Mr. Cheselden in 1728, was unable, upon receiving his sight, to distinguish the outline of any object placed before him, and thought that everything before him touched his eye ; but the cases communicated to this Society by Mr. Ware in 1801 lead to a different conclusion.

The subjects of Mr. Home's experiments were not equally sensible of light previous to the operation of couching, and consequently were not similarly affected by objects presented to them after receiving their sight.

The first was a lad twelve years of age, with cataracts in both eyes, that appeared to have existed from the time of his birth, as it had been noticed from his earliest infancy that his eyes rolled about in an unusual manner, and were not directed to objects before him, nor were his hands ever stretched out to catch at anything ; but it was not till the child was six months old that his mother examined his eyes with attention, and observed cataracts as distinct as when he was brought to Mr. Home.

Previous to the operation, this boy could distinguish light from darkness, and the light of the sun from that of a candle, saying, it was redder and more pleasant to look at ; but lightning made a still stronger impression. He was accustomed to call all light red. He had some conception of size, and said the sun was the size of his hat, and that the flame of the candle was larger than his finger, but less than his arm. He directed both his eyes at once to these objects ; and when a candle was nearer than twelve inches he said it touched him, but at twenty-two inches it was invisible.

The operation of extracting the crystalline lens was first performed on the left eye ; but as the cataract was in this instance found to be fluid, and the inflammation which followed was considerable, the operation of couching was preferred to it for the right eye, and was performed after an interval of eight weeks.

After the first operation, the eye was so imperfect in its powers, the pupil so contracted, and the surface of the cornea so irregular, that he could not discern any object distinctly, but imagined that

everything presented to him touched his eye, and still continued to call every object red.

After couching, the inflammation which followed was not so considerable as in the former case; but this cataract was also fluid, and, from its diffusion through the aqueous humour, occasioned a temporary opacity, which concealed for a time an opacity of the capsule, which rendered the sight permanently imperfect.

It was not till the end of four weeks from the second operation that the sight was again examined, when it was found that he had acquired some knowledge of colours and of the distances of objects, which no longer appeared to touch his eye; but he could not be said to have acquired any discernment of figure.

The second opportunity which Mr. Home had of making similar experiments was in a boy of seven years of age, who had been blind from his birth by cataracts in both eyes. His blindness, however, was not so complete as in the preceding case: his pupil contracted considerably when a lighted candle was placed before it, and by daylight he could distinguish many colours with tolerable accuracy, particularly the more vivid ones. The operation of couching was again preferred in this case, with the hope of avoiding inflammation. It gave very little pain, and was attended with the desired success.

As it was hoped that the eye would be but little disturbed by the operation, Mr. Home was prepared to examine his perception of objects as soon as the operation was over. After the eye had been allowed ten minutes to recover itself, a round piece of card of a yellow colour was placed about six inches from it. He immediately said that it was yellow; but upon being asked the shape, he expressed a wish to touch it. Upon this being refused, he continued to look at it, and at length guessed that it was round; and when a square blue card was put before him, he said that this was blue, and round also. A triangular piece he also called round. With regard to the distance of objects, he could form no judgement, but did not even at first suppose that any of them touched his eye.

The pleasure which this boy received from receiving his sight was such, that it was found impossible to restrain him from using it. The experiments were consequently repeated, and carried further at the distance of about two hours from the operation. Upon being desired to examine a square card with attention, he after some time said, he had found a corner, and then readily counted four corners; and in the same manner counted three angles of a triangle, by running his eye along the edges from corner to corner. He was on various occasions deceived, as might be expected, by the different apparent magnitudes of the same body at different distances: a guinea at fifteen inches distance was taken for a seven shilling piece; but at five inches he thought it a guinea. Upon seeing a cart from a two pair of stairs window, he took it for a wheelbarrow drawn by a dog, and counted the number of horses in other carts, supposing them to be dogs. At the end of a fortnight, when the different pieces of card were placed before him, he could not immediately tell

their shape. These being objects which he had not been accustomed even to feel, he was still learning them as a child learns to read : he could distinguish the angles, and could count their number in succession ; but at the expiration of the third week, he could tell these forms nearly as readily as their colour.

The inferences which Mr. Home draws from these, are, that when the eye, before the cataract is removed, has only been capable of discerning light, without any power of distinguishing colours, then objects, after its removal, appear to touch the eye, and there is no knowledge of their outline, agreeably to the observations made by Mr. Cheselden. But when the eye has previously been able to distinguish colours, it has then also some knowledge of distances, though not of outline, but will soon attain this also, as happened in Mr. Ware's cases.

In a practical view, these cases confirm what has been laid down by Mr. Pott and by Mr. Ware, with regard to cataracts, in being generally soft, and in recommendation of couching as the operation which is best adapted for removing them.

*Observations on the Structure of the different Cavities which constitute the Stomach of the Whale, compared with those of ruminating Animals, with a View to ascertain the Situation of the digestive Organ. By Everard Home, Esq. F.R.S. Read February 12, 1807. [Phil. Trans. 1807, p. 93.]*

Mr. Home, having in a former paper communicated his observations upon the stomachs of ruminating animals, gives the present account of that organ in the whale tribe, to show that it forms a link in the gradation towards the stomach of truly carnivorous animals.

The *Delphinus delphis* of Linnæus, the bottle-nosed porpoise, called by Mr. Hunter the bottle-nosed whale, having been brought ashore alive by some fishermen at Worthing, Mr. Home took the opportunity of examining the structure of its stomach, and discovered a resemblance between the second, third, and fourth cavities in the whale, and the different parts of the fourth cavity in the camel and bullock, which appeared to throw some light upon their uses, as well as upon digestion in general.

The œsophagus in this porpoise is very wide : it has a number of longitudinal folds, and is lined with a strong cuticle, which is continued throughout the first stomach. This stomach lies in the direction of the œsophagus, without any contraction to mark its origin, and bears a strong resemblance in shape to a Florence flask. The coats of its cavity are firm, and are surrounded by a strong muscular covering.

The orifice leading to the second stomach is at right angles to the first, and at a small distance only from the œsophagus : the canal from thence into the second stomach is three inches long, and opens into it by a projecting orifice two inches and a half in diameter, at which the cuticular covering of the preceding parts terminates.